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# EVALUATIVE USEFULNESS AND PROBABILITY OF SUCCESS AS DETERMINANTS OF TASK CHOICE

by

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ABSTRACT

Achievement motivation research has indicated that high resultant achievers prefer tasks of intermediate probability of success whereas low resultant achievers prefer extreme probability of success tasks. High resultant achievers are described as motivated to succeed but not fearful of failure. Low resultant achievers are described as not motivated to succeed but highly fearful of failure. Low resultant achievers are said to avoid failure by selecting extreme probability of success tasks, either easy or difficult. The claim that low resultant achievers select low probability of success tasks in order to avoid failure is not only counterintuitive but also illogical. Failure cannot be avoided by choosing to fail. A more plausible hypothesis is that low resultant achievers avoid negative evaluations of their abilities by selecting either very high probability of success tasks which are unlikely to lead to failure or very low probability of success tasks which are unlikely to lead to negative evaluation following failure.

Since intermediate probability of success tasks are more informative about the ability of people performing them, probability of success and correlation with ability have been confounded in achievement research to date. The tasks in this study were described such that extreme probability of success was associated with high correlation of task score and ability and intermediate probability of

success was associated with low correlation. If high resultant achievers approach evaluative tasks while low resultant achievers avoid such tasks, then high resultant achievers should select extreme probability of success tasks and low resultant achievers intermediate probability of success tasks in this study.

Five tasks were described as varying in probability of success and correlation with IQ. Selection of extreme probability of success tasks would not avoid negative evaluation since scores on these tasks were described as highly correlated with ability. Intermediate probability of success tasks would avoid this possibility since scores on these tasks were described as less correlated with ability. One task was selected by each of 120 subjects . All subjects then did the same task. Task outcome was manipulated. Subjects filled out an attributional questionaire and were asked which task they would prefer if they could select again.

Males and females were divided into five groups each on the basis of achievement motivation scores. There was an overall effect of achievement motivation on both measures of extremity of preferred probability of success ($p<.06$, $.02$). There was a linear trend across the achievement groups for both measures ($p<.05$, $.02$). Success subjects preferred more extreme probability of success than failure subjects on their second choice ($p<.02$). All results were in the predicted direction.

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## Introduction

In recent years attribution theory and achievement theory have been combined to study the causal attributions of people with different levels of resultant achievement motivation (Kukla, 1972; Weiner, Heckhausen, Meyer, & Cook, 1972; Weiner & Kukla, 1970). In these studies resultant achievement motivation has been conceptualized as the difference between the motive to succeed and the motive to avoid failure. High resultant achievers (people with a stronger motive to succeed than fear of failure) are described as primarily motivated to approach success. In situations permitting a choice among tasks, success can most readily be achieved by selecting the easiest task available. However, research has shown that high resultant achievers prefer intermediate probabilities of success to either very high or very low probabilities (Karabenick & Youssef, 1968; McClelland, 1958). Low resultant achievers (people with a stronger fear of failure than motive to succeed) are described as primarily motivated to avoid failure. If a choice of tasks is permitted, the low resultant achiever can best avoid failure by selecting the easiest task available. Low resultant achievers do choose easy tasks but also select extremely difficult tasks, apparently avoiding moderate probabilities of success when given a choice (Karabenick & Youssef, 1968; McClelland, 1958). Few people appear to respond logically if predictions are based on the expectation that high resultant achievers are approaching

success and low resultant achievers are avoiding failure. Both high and low resultant achievers choose tasks which are more difficult than necessary to fulfil their needs.

Atkinson (1957) uses the concepts of valence and utility to explain the choice of more difficult tasks when easier alternatives are available. He hypothesizes that task difficulty and valence of a task are directly related; the more difficult the task the more pleased a person is if they succeed. However, if a task is an achievement task (i.e., there are no extrinsic rewards involved), then why should success at one task be preferable to success at another? The greater pleasure derived from success at a more difficult task may result from the task's evaluative properties. The more difficult the task, the less likely it is that others will succeed at it. This in turn should lead to the attribution of greater ability to those who do succeed.

Weiner and Kukla (1970) have pointed out that tasks with extreme probilities of success provide little information about the person performing the task since little variation in outcome occurs. Most people succeed at easy tasks and fail difficult ones. Outcomes of tasks of intermediate difficulty provide information about the person performing the task because outcomes of such tasks tend to be distributed according to the ability of, and effort expended by, the person performing the task. The person who selects a task with an intermediate probability of success is choosing a task that can be used to evaluate his/her

abilities relative to others performing the same task. High resultant achievers do not maximize the probability of success, but they do maximize the evaluative information obtained from the task.

The choice of extreme probabilities by low resultant achievers has been attributed to their fear of failure which is avoided by choosing tasks which are either sufficiently easy that the person is very unlikely to fail or so difficult that no one could be expected to succeed. The selection of extremely difficult tasks as a means of avoiding failure, though, is counterintuitive. Failure at a task, no matter how difficult, is still failure. The logical choice is the easiest task which would maximize the probability of avoiding failure completely. Why should low resultant achievers choose very difficult tasks if easy tasks are available? By selecting tasks with extreme probabilities of success, low resultant achievers reduce the likelihood that their outcome will differ from the norm. As a result, task performance is not likely to provide information that is evaluatively useful. If low resultant achievers are motivated to avoid evaluation (rather than, or in addition to, avoiding failure), they could accomplish this by selecting either very easy or very difficult tasks.

The preceeding analysis leads to the main hypothesis of the present investigation: High and low resultant achievers seek and avoid evaluation respectively rather than strive to attain success or avoid failure as previously hypothesized

(Atkinson, 1957). Following Kelley's (1967) logic with regard to consenus information, it seems reasonable to predict that any outcome that markedly deviates from the norm will be attributed to some characteristic of the individual. People can control the consensus value and thus the personal information value of their outcome by selecting tasks with appropriate probabilities of success. Providing a choice of tasks gives people the opportunity to obtain evaluatively useful information. If high resultant achievers seek this information while low resultant achievers avoid it, this implies a motivational influence in addition to information seeking. This motivational influence may be described as the tendency to seek enhancement and avoid depreciation of self-concept. If evaluative information is expected to enhance the self-concept, then such information will be sought. If evaluative information is expected to depreciate the self-concept, then such information will be avoided. The expectation of enhancement or depreciation of self-concept is mediated by the pattern of causal attributions for success and failure associated with high and low resultant achievement motivation. To be a high resultant achiever is to have a particular pattern of causal attributions while to be a low resultant achiever is to use a different pattern of causal attributions. Achievement motivation as a characteristic of an individual is no more than the association of attributions with outcomes which that individual has become accustomed to using and the

pattern of behaviour which results as a consequence of continually making the same or similar attributions in similar situations. Due to their pattern of causal attributions, high resultant achievers exposed to evaluatively useful information anticipate positive self-evaluation and positive affect due to enhancement of self-concept. High resultant achievers seek this information. Conversely, due to their pattern of causal attributions, low resultant achievers exposed to evaluatively useful information anticipate negative self-evaluation and negative affect due to depreciation of self-concept. Patterns of causal attribution and evaluative usefulness jointly determine task choice. Achievement motivation is involved as an indication of patterns of causal attribution.

A brief review of the attributional literature illuminates this relationship between patterns of causal attribution and evaluative usefulness as determinants of task choice. High resultant achievers generally attribute success to ability and effort (Hayashi & Yamauchi,1974; Kukla, 1970; Kukla, 1972; Weiner, 1974; Weiner & kukla, 1970; Weiner & Potepan, 1970) and attribute failure to lack of effort (Hayashi & Yamauchi, 1974; Weiner, 1974). Following success, high resultant achievers are rewarded with enhanced ability evaluations and will experience pride as a result of the attribution of their outcome to effort (Weiner & Kukla, 1970). Following failure, high resultant achievers will experience some shame as a result of

attributing their failure to lack of effort (Weiner & Kukla, 1970) but will not attribute low ability to themselves. They may anticipate a reversal of the negative affect by attempting the task again and succeeding due to trying harder. Thus high resultant achievers may gain in self-esteem by evaluating their abilities in achievement situations and expect at worst only temporary negative affect in these situations.

Low resultant achievers attribute failure to a lack of ability (Kukla, 1970; Weiner & Kukla, 1972; Weiner & Potepan, 1970) but show no consistent attributional pattern following success (Weiner, 1974). Thus, low resultant achievers may lose self-esteem as a result of failure but are unlikely to gain in self-esteem following success. Low resultant achievers who fail cannot expect to alleviate the negative affect associated with failure by succeeding in the future since they attribute their failure to a lack of ability which should lead to low expectations of future success if the task were attempted again (Weiner, 1974). Low resultant achievers appear to have a predisposition to accept failure as an indication of lack of ability and also fail to expect covariation between effort and outcome. Weiner (1976) has concluded from this attributional pattern that low resultant achievers function to some extent as if they suffered from learned helplessness in achievement situations.

Clearly, differences in task choice are motivationally

determined and are mediated by causal attributions. In Atkinson's terms, the utility of task outcomes in achievement situations is dependent upon the pattern of causal attributions of the person choosing the task. If a person attributes success to ability and effort but does not attribute failure to lack of ability, then in achievement situations this person should prefer evaluative tasks when a choice is available. If a person attributes failure to lack of ability and does not consistently attribute success to ability and effort, then in achievement situations this person should avoid evaluative tasks. Resultant achievement motivation is predictive of task choice because it is associated with the attributional patterns described above.

The traditional achievement motivation paradigm varies only the probability of success of the tasks used and as a result preferred extremity of probability of success of the tasks used and evaluative usefulness are confounded in these studies. It is not clear whether subjects in previous studies were seeking and avoiding intermediate probability of success or evaluatively useful information. In the present study, tasks were described in such a way that the subjects could base their task selection on either probability of success or evaluative usefulness of the task. The tasks were structured so that contrasting predictions derived from the traditional motive to succeed/avoid failure model and the present formulation could be simultaneously tested. This was accomplished by describing task scores as

highly correlated with ability for tasks with extreme probabilities of success and less correlated with more intermediate probabilities of success. Attributional measures and a measure of achievement motivation were also used to permit a test of the logic based on both the traditional achievement motivation approach and the attributional approach.

## Hypotheses

Specific hypotheses were derived from two sources - previous results in the research area and the logic used to design the present study. The hypotheses derived from previous work were intended as replications of these earlier findings and were also felt to be important as indications that the change in task descriptions used in this study did not alter the customary attributional patterns of high and low resultant achievers. However, these hypotheses do not reflect the major purpose of the study and thus are dealt with in Appendix A.

To test the major hypotheses two tasks were conducted. The first task (task 1) permitted the subject a choice among five subtasks described as differing in probability of success and correlation of outcome with IQ. Extreme probabilities of success were associated with high correlations of outcome with IQ for task 1. The choice of subtask was used to indicate preferred evaluative usefulness. The second task (task 2) permitted the subject to vary the probability of success on each trial. The number

of extreme probability of success trials was used as the measure of preferred evaluative usefulness for task 2. Results from task 1 were expected to be the reverse of previous results in the field while results from task 2 were expected to replicate previous work with regard to preferred extremity of probability of success.

High resultant achievers were predicted to prefer evaluative subtasks and thus extreme probabilities of success on task 1 and intermediate probabilities of success on task 2. Low resultant achievers were expected to prefer non-evaluative subtasks and thus intermediate probabilities of success on task 1 and extreme probabilities of success on tha task 2. The evaluative usefulness and probability of success preferred by the subject were indicated by the choices of subtask for task 1 and by the number of extreme probability trials for task 2. Converting these preferences to indications of preferred level of evaluative usefulness permits specific hypotheses.

Hypothesis 1: A significant main effect of resultant achievement motivation on each measure of preferred evaluative usefulness was predicted. A linear trend across achievement groups was expected such that higher resultant achievement motivation would be associated with a preference for more evaluatively useful tasks.

Hypothesis 2: Following from hypothesis 1, a positive correlation of resultant achievement motivation with preferred evaluative usefulness was predicted.

The preceding predictions are based on the assumption that resultant achievement motivation is indicative of patterns in the attributional behaviour of the subjects. Even if this were not the case, predictions of correlations of attributions and preferred evaluative usefulness can be made. Attributions of success to ability should lead to expectations of future success, enhancement of self-concept, and positive affect. Attributions of failure to lack of ability should have the opposite effect, leading to expectations of failure, depreciation of self-concept, and negative affect.

Hypothesis 3: Subjects who tend to attribute success to ability seek evaluative tasks while those who attribute failure to lack of ability avoid such tasks. Thus ability attributions were predicted to positively correlate with preferred evaluative usefulness.

Subjects attributing success to effort should anticipate that they will have to work hard to succeed again whereas successful subjects who feel that they did not work particularly hard should anticipate easy successes in the future. Failing subjects who already feel that they have worked hard should anticipate future failure whereas those attributing failure to lack of effort might expect to succeed in the future if they tried harder.

Hypothesis 4: Subjects who feel they have already been trying hard will be less willing to select an evaluative task since they will anticipate either failure or the

necessity of working even harder if they are to succeed. Thus it was predicted that attributions of effort are negatively correlated with preferred evaluative usefulness.

Subjects who feel that they succeeded because of good luck should anticipate lower scores and possible failure in the future. Subjects who believe they failed because of bad luck should anticipate higher scores and possible success. The more good luck and the less bad luck the subject feels they had, the less likely they should be to approach an evaluative task.

Hypothesis 5: A negative correlation between preferred evaluative usefulness and luck attributions was predicted.

The more difficult a task is perceived to be, the more a subject should expect to fail at the task in the future. Past success may be attributed to luck or great effort, neither of which may prevail in the future. Subjects who perceive the task as difficult should avoid evaluative tasks.

Hypothesis 6: Preferred evaluative usefulness was predicted to be negatively correlated with attributions to task difficulty (or positively with attributions to task ease).

## Method

### Subjects

Subjects were 65 male and 66 female introductory psychology students at the University of Alberta who participated in partial fulfillment of a requirement for course credit.

### Procedure

One, two, or three subjects arrived at the laboratory for any one session. Subjects entered and were seated at one of three tables. The tables were arranged in an L shape such that the experimenter could sit in a position that was simultaneously visible to all subjects. Plywood screens were placed on the tables to prevent any visual contact among subjects and to facilitate false outcome feedback. The experimenter distributed pencils and copies of the Mehrabian Scales of Achievement (Mehrabian, 1969). The scales were labelled "Preliminary Questionaire F" and "Preliminary Questionaire M" respectively for the versions validated for females and males.

After completion of the achievement scales, a set of experimental instructions (see Appendix B) was given to each subject. The experimenter read the instructions aloud. The instructions indicated that the experiment was "investigating methods of guessing and calculating patterns". There were supposedly five tasks, each consisting of a list of 50 zercs and ones (Kukla, 1972). Subjects were told that they would be permitted to choose the task which

they would perform.

Each task (labelled A to E) was then described in terms of (a) the highest and lowest scores obtained on the task in the past, (b) the mean score in the past on the task, (c) the percent of subjects successful on the task in the past, and (d) the correlations of task scores with IQ. Success at each task was defined as 25 correct responses in 50 trials with each trial requiring that the subject "predict which digit (0 or 1) will be next". Since none of the tasks actually existed, all of this "information" was bogus. The percent of subjects successful in the past was intended as a manipulation of probability of success and is a standard manipulation used in the literature for this purpose. The reported task scores (highest, lowest, and mean) were supportive of the probability of success manipulation. Subjects were expected to believe that task A was the easiest and that the tasks became progessively more difficult from A to E.

The correlation between task score and IQ was intended as a manipulation of the evaluative usefulness of the task. Subjects were led to believe that tasks which produce scores highly correlated with IQ could be used to evaluate their own abilities. Tasks A and E were presented as highly useful for evaluative purposes (i.e., the correlation between performance and IQ was highly positive), tasks B and D would be less useful (less strong correlations), and task C would be of little or no use (near zero correlation). A brief

discussion of the meaning of a correlation coefficient was provided and the characteristics of the task summarized for subjects.

At this point, subjects were asked to select one of the tasks to perform and to record the choice at the top of a blank page which accompanied the experimental instructions. After subjects recorded their choices, the experimenter explained that all subjects would actually do task B. The rationale given was that the experimenter was interested in the relative performance of subjects working on the task of their choice versus those forced to do a task other than the one they preferred. It was stated that task B was chosen because easier and more difficult tasks were available as well as tasks with scores correlating more and less with IQ. The characteristics of task B were reviewed by rereading the appropriate row in the table provided in the experimental instructions.

Fifty trials were then conducted, each followed by feedback. Subjects wrote a zero or one on their answer sheet and indicated with cards marked zero and one the prediction they had made. The experimenter showed the subjects cards marked "incorrect" or "correct" and the subjects marked their response accordingly. The cards were used to prevent the subjects from realizing that their scores were being manipulated. The seating arrangement prevented the subjects from seeing anyone other than the experimenter and feedback could be given such that only the subject which it was

intended for could see the feedback cards. Half of the male and half of the female subjects were randomly assigned to each of the success and failure conditions. Subjects in the success condition were told that their prediction was inaccurate on 15 trials randomly distributed in the 50 trial task. Failure subjects received 28 randomly distributed "incorrect" responses following their predictions. This produced final scores two points less than the (bogus) highest previous score and two points more than the (bogus) lowest previous score respectively for the success and failure conditions. After the last trial, a questionaire containing manipulation checks and items which asked subjects to attribute their outcomes to ability, effort, task difficulty , and luck was then distributed (see Appendix C). Subjects where asked to distribute their points (i.e., their score of 22 or 35 points) across the attributional categories as an indication of the relative importance of each causal factor as a determinant of their final score. This created four dependent measures. Points attributed to ability (Abil 1), points attributed to effort (Ef 1), points attributed to task ease (Ez 1), and points attributed to luck (Lk 1). Subjects also marked four 10-point Likert type scales to indicate how good they thought they were at the task (Good 1), how hard they had tried (Try 1), how difficult the task had been (Dif 1), and how lucky they had been (Lky 1). Finally, subjects were asked which task they would do if they could choose again and why they

would make that choice.

After these questionaires were collected, subjects were informed that data would be obtained on another "conceptually similar but much shorter task". Again the task was described as testing pattern recognition skills. This time there would be 10 trials and any single digit number (zero through nine) could appear at any point in the list. The pattern in the list was described as being quite difficult and as a result the subjects were permitted to use as many numbers as they wished in their predictions. Thus subjects could write all 10 numbers every trial and guarantee a perfect score or write no numbers and guarantee a score of zero. It was emphasized that the subjects were free to use any strategy which they felt was appropriate. On each trial, subjects were given approximately 10 seconds to record their predictions, then the experimenter read the phrase, "The next number on the list is X." Subjects marked their responses as being correct or incorrect and made their next prediction. At the end of this task, subjects completed another questionaire (see Appendix C). Again subjects were asked to distribute their points across the four attributional categories and to mark Likert type scales as they had following task 1. These dependent measures are labelled Abil 2, Ef 2, Ez 2, and Lk 2 for the attribution of points to causal categories; and Good 2, Try 2, Dif 2, and Lky 2 for the direct attributions on the Likert type scales.

The subjects were then probed for suspiciousness and

thoroughly debriefed, especially with regard to the manipulation of scores on task 1.

## Results

Eleven subjects were eliminated from the analysis because they failed to appropriately complete one or more of the dependent measures. Eight of these subjects failed to notice the second page of questions on either the post-task 1 questionaire or the Mehrabian scale. Two subjects left one or more questions blank on the Mehrabian scale and could not be given a score for achievement motivation. The remaining subject did not record either her predictions nor her results for task 1 and could not be given a score without revealing that the outcome was manipulated. Three subjects were eliminated from each of the female success and female failure conditions, four were eliminated from the male failure condition and one from the male success condition. These subjects were replaced, bringing the final number of subjects in the analysis to 120, equally distributed across the four Sex X Outcome groups. Each of these groups was then subdivided into five groups according to their Mehrabian resultant achievement motivation scores. A 2 X 2 X 5 (Sex X Outcome X Achievement Motivation) between subjects analysis of variance was performed on each of the dependent measures. Analysis of variance summary tables are provided in Appendix D.

### Evaluative Usefulness

The first two hypotheses refer to the level of evaluative usefulness that subjects would prefer. To test these hypotheses the subtask choices were converted to a

numerical score of preferred evaluative usefulness. This was accomplished by scoring a choice of either subtask A or E as two, subtasks B and D were scored one, and subtask C was scored zero. Thus the higher the score a subject receives the more evaluatively useful the subtask the subject chose. This procedure was followed for both the pre-task 1 choice and the post-task 1 choice. The two variables created in this way will be referred to as Evaluative Usefulness 1 (EU 1) and Evaluative Usefulness 2 (EU 2) respectively. Subjects were expected to believe that task scores highly correlated with ability, in this case IQ, could be used to evaluate their abilities. Subjects' responses to task 2 were converted to a measure of evaluative usefulness (EU 3) by considering a trial on which 0, 1, 2, 8, 9, or 10 digits were recorded as low in evaluative usefulness (scored zero) while trials with 3 to 7 digits recorded were considered high in evaluative usefulness (scored one). The use of very many or very few digits per trial would give subjects an adequate explanation of their outcome in most cases and thus such a strategy would prevent task scores from being evaluatively useful. The use of a moderate number of digits per trial permits a wider range of likely outcomes and thus enhances the chance that task scores would be evaluatively useful.

Although the main effect of achievement motivation on EU 1 is only marginally significant, $F$ (4, 100) = 2.37, $p$ <.06, the overall pattern of results supported the first two

hypotheses for data obtained from task 1. The main effect of achievement motivation on EU 2 was significant, $F$ (4, 100) = 3.18, $p < .025$ and both linear trends were significant, for EU 1 $F$ (1, 100) = 3.08, $p < .05$ and for EU 2 $F$ (1, 100) = 4.53, $p < .025$ (see Appendix D for analysis of variance summaries). In addition, both EU1 and EU2 were significantly correlated with resultant achievement motivation, $r$ (119) = .20 and .19 respectively, $p < .05$ in both cases. None of the results was significant for EU 3, main effect and linear trend $F < 1$, correlation with achievement motivation $r$ (119) = .04, n.s. Examination of the means (Table 1) and the size of the correlations suggest that much of the variance in task choice was not accounted for by evaluative usefulness. The significant findings indicated only that this variable has some influence on such choices. Duncan multiple range test results revealed that for EU 1 only the highest achievement motivation group differs significantly from any of the others, while for EU 2 only the second lowest group differs from the others. There were no significant differences for EU 3 (Table 1).

The correlational analysis supported hypothesis 3 indicating that attributions to ability were predictive of preferred evaluative usefulness and thus task choice. Of the six correlations used to test this hypothesis, five were statistically significant ranging in size from $r = .24$ to $r = .33$, with 119 df, $p < .01$ in all cases (see Table 2). Again the size of the correlations suggests that ability

attributions are linked with preferred evaluative usefulness and task choice, but other factors also influence such choices.

Hypotheses 4, 5, and 6 were not supported. Eighteen correlations were predicted between preferred evaluative usefulness and attributions to effort, task difficulty, and luck; only three were significant and one of these was not in the predicted direction.

The results show that subtask choices of subjects varying in resultant achievement motivation were influenced by the evaluative usefulness of the subtasks. High resultant achievers tended to prefer evaluatively useful tasks while low resultant achievers avoided these tasks. In addition, ability attributions were predictive of subtask choice. Subjects who attributed high ability to themselves preferred evaluative tasks relatively more than subjects attributing little ability to themselves.

## Discussion

For task 1 resultant achievement motivation was predictive of task choice even though task descriptions were altered to differentiate the effects of evaluative usefulness from probability of success. People appear to approach or avoid evaluative information rather than success and failure. People high in resultant achievement motivation preferred more evaluative tasks while people low in resultant achievement motivation preferred less evaluative tasks. This pattern of task choice meant that high resultant achievers selected tasks with extreme probability of success while low resultant achievers selected tasks with intermediate probability of success. This is the opposite of predictions based on Atkinson's theory of achievement motivation.

Previous attempts to demonstrate that people differing in resultant achievement motivation were not responding to probability of success when given a choice of tasks were methodologically flawed. Trope and Brickman (1975) found that subjects preferred informative to noninformative tasks and preferred easy to difficult tasks having the same level of "expected diognosticity". Their study was also stimulated by Weiner's reasoning that tasks with an intermediate probability of success are more informative than tasks with extreme probabilities of success. However, this study failed to consider differences in resultant achievement motivation. The authors felt that university students could be

characterized in general as high in achievement motivation and thus they simply predicted a preference for informative tasks. In a later study, Trope (1975) corrected this shortcoming and demonstrated that people high in resultant achievement motivaticn prefer informative tasks more than people low in resultant achievement motivation and replicated the finding that easy tasks were preferred to difficult ones. Trope did not emphasize motivational concepts as an explanation of his results. He claimed that "choice among tasks can be viewed as an instance of rational information-seeking behavior" (pg. 1012). This conclusion seems unwarranted since it does not explain the behaviour of subjects differing in resultant achievement motivation.

Of greater importance is Trope's failure to collect attributional data in support of his position. The logic used in both Trope's work and the present study follows from Weiner's work. This approach reasons that people high in resultant achievement motivation attribute success to ability and effort, which maximizes positive affect following success, and attribute failure to lack of effort, which permits continued high expectations of future success. People low in resultant achievement motivation do not consistently attribute success to ability and effort which should produce less positive affect following success. Following failure, people low in resultant achievement motivation attribute their outcome to lack of ability, which leads to negative affect and low expectations of future

succcess. These attributional patterns lead people high and low in resultant achievement motivation to anticipate positive and negative affect, respectively, when exposed to evaluatively useful tasks. For this reason, people high in resultant achievement motivation seek evaluative tasks while people low in resultant achievement motivation avoid them. Only to the extent that subjects make such attributions is it reasonable to conclude that this approach has accurately predicted their behaviour. Thus, attributional measures are essential to this research.

The failure to replicate results concerned with resultant achievement motivation (see Appendix A) is crucial since the logic which accurately predicted task choice by subjects varying in resultant achievement motivation was based on their reported pattern of attributions. If one ignores the concept of resultant achievement motivation completely, then task choice would be predicted by the subjects' attributions to success and failure. People who made high attributions to ability and effort following success would be expected to select evaluative tasks due to their anticipation of positive affect after succeeding at an evaluative task. People attributing failure to low ability should avoid evaluative tasks to avoid negative affect. This logic predicts a positive correlation between attributions to ability and preferred level of evaluative usefulness. This prediction (hypothesis 4) was strongly supported by the data. However, the remaining three hypotheses (5, 6, and 7)

dealing with attributions to effort, task difficulty, and luck received no support.

The failure to obtain significant results for task 2 may simply reflect the confusion that many subjects expressed when confronted with the task. Most subjects found the task peculiar and many doubted that they had taken it seriously. No such doubts were expressed with regard to the first task.

Overall the results indicate that preferred evaluative usefulness for task 1 was accurately predicted from resultant achievement motivation scores and from the pattern of attributions. This is especially true for the post-task 1 choice. However the attributions were not predictable from the achievement motivation scores and only the ability attributions were good predictors of task choice. The strong replication of attributions associated with success and failure indicated that subjects were not responding in an atypical fashion. Apparently achievement motivation and attributional pattern account for independent portions of the variance of task choice in this experiment.

One interpretation of this result is that the attributions and Mehrabian scales are related to different dimensions within achievement motivation. Perhaps the usual confounding of intermediate probability of success and evaluative usefulness produces a spurious correlation of causal attributions with the Mehrabian scale values. Problems recently described with regard to measurement

suggest that achievement motivation may be multi-dimensional (Entwisle, 1972; Harper, 1975; Wotruba and Price, 1975). If only one dimension of achievement motivation were correlated with causal attributions, or if each dimension were associated with unique patterns of attribution, then no unidimensional scale would be expected to produce consistent results. Jackson, Ahmed, and Heapy (1976) propose that achievement motivation has three major dimensions. People may seek to achieve by competition with standards of excellence (Atkinson's conceptualization), or by gains in status with peers and experts (evaluative motivation), or by acquiring material rewards as indications of their success (extrinsic motivation). This study could be viewed as forcing subjects to choose between the first two types of achievement motivation. The results would be interpreted as indicating that university students tend to seek evaluative tasks and relative status more than competition with standards of excellence.

Jackson's work deals with the measurement of achievement motivation, rather than the consequences of being high or low on this dimension (Jackson, Ahmed, and Heapy, 1976). His work and the present study suggest that different degrees of each type of achievement tendency may be related to distinctive attributional patterns and probability preferences. This agrees with some results which indicate that subjects tend to be highly individualistic in their use of task and person information about success and

failure outcomes (Frieze & Weiner, 1971). Future research should use Jackson's three dimensions and also collect attributional and behavioural measures to further explicate the relationship of achieving tendencies, causal attributions, and behaviour.

The failure to replicate previous work relating achievement motivation to attributions cannot be explained as the result of atypical behaviour on the part of the subjects since the predictions of attributions associated with success and failure were strongly supported. Assuming that the failure to replicate is the result of the change in task descriptions, what does this imply? If simply changing the task description can eliminate previously obtained relationships, this suggests that these relationships may have been spurious. It is possible that the pattern of attributions which leads to the selection of evaluatively useful tasks is not related to achievement motivation. Achievement motivation may be predictive of preferred evaluative usefulness but this would only produce a relationship with causal attributions when standard task descriptions were used. The relationship would appear then due to the confounding of intermediate probability of success with evaluative usefulness. Thus both achievement motivation and the pattern of attributions may be predictive of task choice (as was the case in this study) yet they need not be related to each other.

The foundation of the achievement motivation and

attribution approach rests on two assumptions. First, it is assumed that achievement motivation is a relatively stable disposition of the person. Lack of reliability in the measurement of achievement motivation has led to severe criticism of this assumption in the recent years (Entwisle, 1972; Fineman, 1977; Wotruba & Price, 1975). The second assumption is that people make the same (or at least similar) attributions of causality for the same (or similar) outcomes across time and situations. This is particularly the case if the "true cause" of the outcome is ambiguous. This assumption remains untested. Jackson's work may provide a superior measure of achievement motivation and reduce criticism of the first assumption; however, the second assumption must be tested before work in this area can progress much further.

Table 1

Mean Evaluative Usefulness Preferred by Five Groups Differing in Achievement Motivation

| Measure of evaluative usefulness | Level of achievement motivation[1] | | | | |
|---|---|---|---|---|---|
| | Highest I | II | III | IV | Lowest V |
| EU 1[2] | 1.50a | 1.04b | 1.08b | 0.92b | 1.17b |
| EU 2[2] | 1.54a | 1.38a | 1.42a | 0.88b | 1.31a |
| EU 3[3] | 7.00a | 6.08a | 5.50a | 6.25a | 6.04a |

[1]n = 24 per group

[2]maximum score = 2

[3]maximum score = 10

Note: Means sharing the same subscript within each row do not differ significantly (.05 ) by Duncan multiple range test.

Table 2

Correlations of Preferred Evaluative Usefulness with Attributions to Ability

| Correlated variables | Predicted correlation | df | r | p< |
|---|---|---|---|---|
| EU 1 and Abil 1 | + | 119 | .24 | .01 |
| EU 2 and Abil 1 | + | 119 | .33 | .001 |
| EU 3 and Abil 2 | + | 119 | .28 | .002 |
| EU 1 and Good 1 | + | 119 | .15 | n.s. |
| EU 2 and Good 1 | + | 119 | .26 | .005 |
| EU 3 and Good 2 | + | 119 | .31 | .001 |

Table 3

Correlations of Preferred Evaluative Usefulness with Attributions to Effort, Task Difficulty, and Luck

| Correlated variables | Predicted correlation | df | r | p< |
|---|---|---|---|---|
| **Effort attributions** | | | | |
| EU 1 and Ef 1 | - | 119 | -.07 | n.s. |
| EU 2 and Ef 1 | - | 119 | .00 | n.s. |
| EU 3 and Ef 2 | - | 119 | .27 | .005 |
| EU 1 and Try 1 | - | 119 | .01 | n.s. |
| EU 2 and Try 1 | - | 119 | .11 | n.s. |
| EU 3 and Try 2 | - | 119 | -.15 | n.s. |
| **Task difficulty attributions** | | | | |
| EU 1 and Ez 1 | + | 119 | .03 | n.s. |
| EU 2 and Ez 1 | + | 119 | .11 | n.s. |
| EU 3 and Ez 2 | + | 119 | -.03 | n.s. |
| EU 1 and Dif 1 | - | 119 | -.02 | n.s. |
| EU 2 and Dif 1 | - | 119 | -.18 | .05 |
| EU 3 and Dif 2 | - | 119 | -.15 | n.s. |
| **Luck attributions** | | | | |
| EU 1 and Lk 1 | - | 119 | -.13 | n.s. |
| EU 2 and Lk 1 | - | 119 | -.28 | .002 |
| EU 3 and Lk 2 | - | 119 | -.03 | n.s. |
| EU 1 and Lky 1 | - | 119 | .03 | n.s. |
| EU 2 and Lky 1 | - | 119 | -.01 | n.s. |
| EU 3 and Lky 2 | - | 119 | -.03 | n.s. |

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# APPENDIX A

## REPLICATION OF PREVIOUS RESULTS IN THE FIELD

The following hypotheses were derived from previous work in the field. The source or sources of each hypothesis are indicated in parentheses. In each case the obtained effect must have reached statistical significance (.05) in the studies cited in order to have been considered here.

Subjects who have succeeded, relative to subjects who have failed, will:

a) describe themselves as having greater ability (Bar-Tal & Frieze, 1976; Kukla, 1972; Simon & Feather, 1973; Weiner & Kukla, 1970; Weiner & Potepan, 1970),

b) describe themselves has having tried harder (Bar-Tal & Frieze, 1976; Frieze & Weiner, 1971),

c) describe the task as easier (Bar-Tal & Frieze, 1976; Weiner & Potepan, 1970),

d) describe themselves as luckier (Bar-Tal & Frieze, 1976; Weiner & Kukla, 1970),

e) expect to do better in the future on the same task (Bar-Tal & Frieze,1976),

f) use task attributions less to explain their outcome (Frieze, 1976; Frieze & Weiner, 1971),

g) use ability attributions more to explain their outcome (Frieze, 1976; Frieze & Weiner, 1971), and

h) use effort attributions more to explain their outcome (Frieze & Weiner, 1971).

Note that the last three hypotheses refer to the relative

frequency of use of each causal attribution as an explanation of the person's outcome. To test these hypotheses an attribution was considered to be used as an explanation of the person's outcome if the person attributed most points to that category for success subjects or least points for failure subjects. Thus, Hypothesis g was tested by comparing the number of success subjects attributing most points to ability. A similar strategy was employed with the direct attributions, the number of success subjects making their highest scale rating to ability was predicted to be greater than the number of failure subjects making their lowest scale rating to ability. The least points and lowest scale value were used for failure subjects because high ability, great effort, an easy task, and/or good luck can only be explanations of success, not failure.

In comparison to males, females will:

i) attribute less ability to themselves, in particular females following failure will attribute the least ability to themselves ( Simon & Feather, 1973),

j) use luck and task difficulty to explain their outcome (Simon & Feather, 1973), and

k) attribute failure to bad luck and/or a difficult task (Simon & Feather, 1973).

Resultant achievement motivation will correlate:

l) positively with attributions of success to ability (Weiner & Potepan, 1970),

m) positively with attributions of success to effort (Weiner

& Potepan, 1970), and

n) negatively with attributions of failure to lack of ability (Weiner & Potepan, 1971).

## Results and Discussion of Replications

Four of the first five hypotheses are supported (see table 4). Only the results of predictions with regard to effort fail to reach an acceptable level of statistical significance although these results are in the predicted direction. The number of points attributed to luck is greater for failure subjects than for success subjects; however, the success subjects rated themselves as luckier. Hypotheses f, g, and h also receive some support (see tables 5 and 6). Overall these results strongly replicate previous findings with regard to attributions to success and failure. This indicated that the subjects in this study were making attributions in a manner typical of subjects in such studies.

Of the three hypothesized sex differences, only one was supported by the data; female failures attributed less ability to themselves than did any other group (see table 7). No support was found for the other sex difference predictions. None of the predictions of correlations of resultant achievement motivation with attributions were supported.

Table 4

Main Effects of Outcome Replicating Previous Work in the Field

| Hypothesis | Variable | Mean success | Mean failure | F | p< |
|---|---|---|---|---|---|
| a | ability[1] | 9.20 | 6.17 | 8.37 | .005 |
| a | good[2] | 5.42 | 3.20 | 57.92 | .001 |
| b | effort[1] | 9.30 | 8.10 | 1.67 | n. s. |
| b | try[2] | 6.77 | 6.12 | 2.98 | .10 |
| c | task ease[1] | 7.37 | 4.00 | 16.20 | .0005 |
| c | task difficulty[2] | 3.95 | 5.32 | 16.16 | .0005 |
| d | luck[1] | 9.23 | 16.85 | 28.14 | .0001 |
| d | lucky[2] | 5.15 | 4.35 | 5.01 | .05 |
| e | expected score if tried again | 37.77 | 26.32 | 287.13 | .0001 |

Note. All F values have 1 and 100 degrees of freedom.

[1]Values on these variables were determined by the number of points attributed to each attributional category on the post-task 1 questionaire on which the subjects were asked to distribute their total score across the four categories. Scores were equated for success and failure subjects by multiplying the failure subjects' scores by 35/22 before the analyses were perfcrmed.

[2]Values on these variables represent the subjects' self-ratings on the four Likert type scales on the post-task 1 questionaire.

Table 5

Use of Four Attributional Causes as Explanations of Outcome on the Number of Points Attributed to Each Cause

| | Ability | Effort | Task Ease | Luck | |
|---|---|---|---|---|---|
| Success | 16 | 10 | 7 | 13 | 46 |
| Failure | 9 | 4 | 17 | 3 | 33 |
| | 25 | 14 | 24 | 16 | 79 |

Note. Numbers entered in the table reflect the frequency that each causal category was attributed most points for success subjects and least points for failure subjects. Ties were eliminated. Task one data only. Chi square with 3 degrees of freedom = 13.11, $p<.01$.

Table 6

Use of Four Attributional Causes as Explantions of Outcome Based on Direct Attributions to Each Cause

| | Ability | Effort | Task Difficulty | Luck | |
|---|---|---|---|---|---|
| Success | 4 | 28 | 3 | 5 | 40 |
| Failure | 21 | 4 | 12 | 8 | 45 |
| | 25 | 32 | 15 | 13 | 85 |

Note. Numbers entered in the table reflect the frequecny that each causal category was rated highest for success subjects and lowest for failure subjects. Ties were eliminated. Task 1 data only. Chi square with 3 df = 35.47, $p<.01$.

Table 7

Predicted Sex Differences in the Use of Ability as a Causal Attribution

| Variable | Mean female | Mean male | *F* | *p*< |
|---|---|---|---|---|
| Ability[1] | 6.18 | 6.88 | 1.00 | n.s. |
| Good[2] | 4.03 | 4.58 | 3.57 | .10 |
| **Variable** | **Female failure** | **All others** | ***t*** | ***p*** |
| Ability[1] | 2.97 | 7.72 | 4.72 | .005 |
| Good[2] | 2.83 | 4.80 | 13.81 | .005 |
| **Variable** | **Female failure** | **Male failure** | ***t*** | ***p*** |
| Ability[1] | 2.97 | 4.77 | 1.46 | .10 |
| Good[2] | 2.83 | 3.57 | 1.80 | .05 |

*Note*. The *F* values have 1 and 100 degrees of freedom. The *t* values have 118 degrees of freedom.

[1]This variable refers to the number of points attributed to ability, question 7, section a, on the post-task 1 questionaire.

[2]This variable refers to the self rating of ability, question 8, on the post task 1 questionaire.

# APPENDIX B

## VERBATIM TRANSCRIPT

After all subjects were seated they were asked to complete the Mehrabian questionaires. When the last subject had finished this the experimenter distributed a set of experimental instructions and said "I will read the instructions aloud and I'd like you to follow along on your copy." The written instructions appear below:

> This experiment is one in a series of studies investigating methods of guessing and calculating patterns. Each pattern represents a task. You will be permitted to choose the task which you will attempt from the five available. Each task involves a series of 50 digits, all of which are either 0 or 1. Your job is to predict which digit will be next. You will write down your guess on the answer sheet which I have provided. I will check the digit against the list for the task which you are doing and indicate with cards whether you were correct (card marked "correct") or incorrect (card marked "incorrect "). You will put a check mark beside each correct response and an X beside each incorrect response before proceeding to guess the next digit.
>
> This is a test of your synthetic as opposed to your analytic ability. By this I mean that there is no one definite pattern, like 010101, that you could easily detect and get all the answers correct from then on. But the list also is not random. Instead there are certain general trends and tendencies in the list - perhaps a greater frequency of one kind of pattern over another. To the extent that you can become sensitive to those tendencies, you can make your score come out consistently above the previously obtained average score on the task you attempt. Of course you could obtain a particularly high score simply because you are lucky, or because you try harder than others, or because you find the task easy.
>
> In order to give you some basis for selecting the task which you will attempt, the following data have been compiled from earlier studies:

| Task | Highest lowest score | Mean | Success | % Ss successful in the past | Correlation with IQ |
|---|---|---|---|---|---|
| A | 44/22 | 36.4 | 25 | 90.1 | .89 |
| B | 37/22 | 30.2 | 25 | 69.9 | .40 |
| C | 33/16 | 25.1 | 25 | 50.1 | .02 |
| D | 29/12 | 20.0 | 25 | 30.1 | .38 |
| E | 26/10 | 13.8 | 25 | 9.8 | .91 |

The first set of numbers indicate the highest and lowest scores previously obtained on each task. The next set of numbers indicate the mean or average score obtained for each task. The third column indicates that the criterion of success is 25 correct responses regardless of which task you choose. The fourth column indicates the number of people who have succeeded at each task in the previous research (expressed as a percentage). The final column indicates the degree of correlation between scores on the task and intelligence as measured by standard IQ tests.

A correlation coefficient is a number between +1 and -1 indicating the degree of relatedness between two variables. A perfect positive correlation (+1) indicates that the higher the value of one variable the higher the value of the other. A perfect negative correlation (-1) indicates that the higher the value of one variable the lower the value of the other. A correlation coefficient near 0 indicates that the two variables are not related and thus knowledge of the value of one variable will not help to predict the value of the other variable.

Thus the tasks in this experiment include two patterns (A and E) on which higher scores are associated with higher intelligence, two patterns (B and D) on which higher scores may be associated with greater intelligence but on which intelligence alone does not seem sufficient to explain the obtained scores, and finally one pattern (C) on which intelligent people do no better than anyone else and thus it is not clear why some people succeed while others fail at C. In addition, a choice of task exists with regard to difficulty, ranging from A which few people have failed to E which few have mastered. The amount of luck you have and the effort you expend may also influence your final score.

Are there any questions before we begin?

"You may now choose the task you prefer. Place the letter

corresponding to the task on the top left hand corner of the blank piece of paper provided."

The experimenter waited until all subjects had recorded their choice and then continued; "Thank you for recording that choice. To this pcint, this is exactly how we ran the previous studies when we were getting the data about each task. In this experiment we have a slightly different purpose - we are studying how well people do on tasks other than ones which they would prefer to do. We believe that this is important to know since students generally have no choice in the type of examinations and evaluations made of them in the educational system. Fcr example, you will often hear someone remark that they would have done much better on a test if it had been an essay exam instead of multiple choice.

"For this experiment we selected tasks which varied widely in the their characteristics in order to force people to perform tasks which were either more or less difficult or more or less correlated with ability than they would prefer. An examination of the tasks will reveal that either task B or D could be used for this purpose since both are easier and harder than scme others and both are more and less correlated with IQ than some others. We flipped a coin and chose B. If you chose task B then you will simply be in the control condition.

"So, everybody will do task B. Because you may not have chosen task B, let's review the data on it before we begin.

This is the task you will be doing. The highest previous score was 37. The lowest previous score was 20. The average score was 30 and finally, scores on this task are somewhat related to intelligence such that more intelligent people do tend to get higher scores than less intelligent people but IQ alone is not sufficient to explain all scores. Apparently effort, luck, and the difficulty of the task also influence scores to some extent on this task.

"OK, we're ready to begin. Of course your first response of either zero or one can only be a guess so I'll start on the left and work to the right. The time it takes to give feedback to the other subjects should be adequate to allow you to make your next choice.

"Let's begin." The experimenter then faced the subject sitting furthest to his left and said, "Please make your first choice, write it down, and indicate it to me with the card. Don't forget to mark them right or wrong and try to be ready for changes in the pattern." Nothing more was said until the fifty trials were completed. "That completes the task. Would you please fill in this questionaire?"

When all subjects had finished, the questionaires were collected and the experimenter continued: "Since we have some time left I'm going to collect data on another much shorter but conceptually similar task. Again the task involves predicting patterns in a list of digits but in this case any single digit number may appear in the list - that is 0, 1, 2, 3, 4, 5, 6, 7, 8, or 9. This list has a total of

10 digits. You will write your guess or guesses down and then I will read out the correct number. Once again you will mark your guess or guesses either correct or incorrect after each trial.

"On each trial you may make as many or as few guesses as you wish. That is, on the first trial, when you are trying to predict the first digit of the list, you may write down no numbers and simply wait to see what the first number is or you may write down all of the digits thus guaranteeing a correct response or you may choose to write down any number of digits you choose between those extremes. Regardless of how many digits you write down your response is correct if the correct digit was any of the ones you wrote. On each of the subsequent trials you may also choose to write down any number of digits which seems appropriate to you.

"Are there any questions about this task?" Ten trials were then conducted. For each trial the subjects were given about 10 seconds to record their predictions. The number used as the correct response was then read aloud and the next trial began. "Please add up your score on this task. One more set of questions to answer and we're done." The final set of questions was collected. The subjects were probed for suspiciousness, debriefed, and excused.

# APPENDIX C

## QUESTIONAIRES AND DEPENDENT MEASURES

Preliminary questionaire F

The following questionaire of personal attitudes consists of a number of items worded as: "I'd rather do (A) than (B)," such as "I'd rather go swimming than go bowling." You are to indicate the extent of your agreement with each item using the scale below. Please note that if you give strong agreement to the statement, "I'd rather do (A) than (B)", this indicates that you prefer (A) much more than (B). If you give strong disagreement to that same statement, this indicates that you prefer (B) much more than (A).

Indicate, for each item, the extent of your agreement or disagreement with that item by entering the appropriate numeral (+4 to -4) in the space provided by each item.

+4 = very strong agreement
+3 = strong agreement
+2 = moderate agreement
+1 = slight agreement
0 = neither agreement nor disagreement
-1 = slight disagreement
-2 = moderate disagreement
-3 = strong disagreement
-4 = very strong disagreement

_____ 1. I think more about getting a good grade than I worry about a bad grade.

_____ 2. I more often attempt difficult tasks that I am not sure I can do than easier tasks I believe I can do.

_____ 3. I would rather do something at which I feel confident and relaxed than something which is challenging and difficult.

_____ 4. If I am not good at something I would rather keep struggling to master it than move on to something I may be good at.

_____ 5. I would rather have a job in which my role is clearly defined by others and my rewards could be higher than average, than a job in which my role is to be defined by me and my rewards are average.

_____ 6. My strongest feelings are aroused by fear of failure rather than by hope of success.

_____ 7. I would prefer a well-written informative book to a good movie.

_____ 8. I would prefer a job which is important, difficult, and involves a 50 percent chance of failure to a job which is somewhat important

but not difficult.

_____ 9. I would rather learn fun games that most people know than learn unusual skill games which only a few people would know.

_____ 10. It is very important for me to do my work as well as I can even if it means not getting along well with my co-workers.

_____ 11. For me, the pain of getting turned down after a job interview is greater than the pleasure of getting hired.

_____ 12. If I am going to play cards I would rather play a fun game than a difficult game.

_____ 13. I prefer competitive situations in which I have superior ability to those in which everyone involved is about equal in ability.

_____ 14. I think more of the future than of the present and past.

_____ 15. I am more unhappy about doing something badly than I am happy about doing something well.

_____ 16. I worry more about whether people will praise my work than I do about whether people will criticize it.

_____ 17. If I had to spend the money myself I would rather have an exceptional meal out than spend less and prepare an exceptional meal at home.

_____ 18. I would rather do a paper on my own than take a test.

_____ 19. I would rather share in the decision-making process of a group than take total responsibility for directing the group's activities.

_____ 20. I would rather try to make new and interesting meals that may turn out badly than make more familiar meals that frequently turn out well.

_____ 21. I would rather do something I enjoy than do something that I think is worthwhile but not much fun.

_____ 22. I would rather try to get two or three things done quickly than spend all my time working on one project.

_____ 23. If I am ill and must stay home, I use the time to relax and recuperate rather than try to read or work.

_____ 24. If I were rooming with a number of girls and we decided to have a party, I would rather organize the party myself than have one of the others organize it.

_____ 25. I would rather cook for a couple of gourmet eaters than for a couple who simply have huge appetites.

_____ 26. I would rather that our women's group be allowed to help organize city projects than be allowed to work on the projects after they have been organized.

Preliminary questionaire M

The same instructions appear at the top of this questionaire as on preliminary questionaire F. The questions differed and are reproduced below:

_____ 1. I worry more about getting a bad grade than I think about getting a good grade.

_____ 2. I would rather work on a task where I alone am responsible for the final product than one in

which many people contribute to the final product.

_____ 3. I more often attempt difficult tasks that I am not sure I can do than easier tasks I believe I can do.

_____ 4. I would rather do something at which I feel confident and relaxed than something which is challenging and difficult.

_____ 5. If I am not good at something I would rather keep struggling to master it than move on to something I may be good at.

_____ 6. I would rather have a job in which my role is clearly defined by others and my rewards could be higher than average, than a job in which my role is to be defined by me and my rewards are average.

_____ 7. I would prefer a well-written informative book to a good movie.

_____ 8. I would prefer a job which is important, difficult, and involves a 50 percent chance of failure to a job which is somewhat important

but not difficult.

_____ 9. I would rather learn fun games that most people know than learn unusual skill games which only a few people would know.

_____ 10. It is very important for me to do my work as well as I can even if it means not getting along well with my co-workers.

_____ 11. For me, the pain of getting turned down after a job interview is greater than the pleasure of getting hired.

_____ 12. If I am going to play cards I would rather play a fun game than a difficult thought game.

_____ 13. I prefer competitive situations in which I have superior ability to those in which everyone involved is about equal in ability.

_____ 14. I think more of the future than of the present and past.

_____ 15. I am more unhappy about doing something badly than I am happy about doing something well.

_____ 16. In my spare time I would rather learn a game to develop skill than for recreation.

_____ 17. I would rather run my own business and face a 50 percent chance of bankruptcy than work for another firm.

_____ 18. I would rather take a job in which the starting salary is $10,000. and could stay that way for some time than a job in which the starting salary is $5,000. and there is a guarantee that within five years I will be earning more than $10,000.

_____ 19. I would rather play in a team game than compete with just one other person.

_____ 20. The thing that is most important for me about learning to play the guitar is being able to play a musical instrument very well, rather than learning it to have a better time with my friends.

_____ 21. I prefer multiple-choice questions on exams to essay questions.

_____ 22. I would rather work on commission which is

somewhat risky but where I would have the possibility of making more than working on a fixed salary.

_____ 23. I think that I hate losing more than I love winning.

_____ 24. I would rather wait one or two years and have my parents buy me one great gift than have them buy me several average gifts over the same period of time.

_____ 25. If I were able to return to one of two incompleted tasks, I would rather return to the difficult than the easy one.

_____ 26. I think more about my past accomplishments than about my future goals.

Dependent measures collected following task 1

Please complete the following questionaire.

1) Which task did you attempt? (circle one) A, B, C, D, E.

2) What percentage of people succeeded in the past at the task which you have just completed? (circle the closest figure)

A) 10% B) 30% C) 50% D) 70% E) 90%

3) In comparison to the average performance on the task which you have just completed was your perfcrmance:

a) better than average

b) about average

c) below average

4) What was your final score (number correct)? _____

5) Would <u>you</u> subjectively classify this score as a:

a) failure

b) success

6) What is the minimum score <u>you</u> would consider a success for this task? _____

7) Take your total score (response to question 4) and divide it as best you can into points you would attribute to:

a) ability _____ (points gained because you are good at doing this task).

b) effort _____ (points gained because you tried hard).

c) task ease _____ (points gained because the task was easy).

d) luck _____ (points gained simply by luck).

These four figures should total to your task score.

Please place an X in the appropriate space on each scale as your response to each question.

8) How good are you potentially at this task?

---

VERY POOR — VERY GOOD

9) How hard did you try to succeed at this task?

---

NOT AT ALL — AS HARD AS I COULD

10) How difficult do you think the task was?

---

VERY VERY

DIFFICULT EASY

11) How lucky do you think you were?

---

VERY VERY

UNLUCKY LUCKY

12) If I were to do the same task again right now I think my score would be about _____ .

13) If I had a chance tc choose again I would prefer most to attempt task _____ .

14) Why would you make the above choice?

Dependent measures collected following task 2

The questionaire distributed after task 2 had nine questions on it. These questions were identical in content and format to questions 4 thrcugh 12 of the questionaire distributed after task 1.

# Appendix D

## ANALYSIS OF VARIANCE SUMMARY TABLES

Table 8

Preferred Evaluative Usefulness as Indicated by Subjects' Initial Choice of Subtask (EU 1)

| Source of variance | df | SS | MS | F | p< |
|---|---|---|---|---|---|
| Sex (S) | 1 | 2.408 | 2.408 | 4.93 | .025 |
| Outcome (O) | 1 | 0.075 | 0.075 | <1 | n.s. |
| Achievement motivation (A) | 4 | 4.633 | 1.158 | 2.37 | .06 |
| S X O | 1 | 0.009 | 0.009 | <1 | n.s. |
| S X A | 4 | 0.467 | 0.117 | <1 | n.s. |
| O X A | 4 | 1.300 | 0.325 | <1 | n.s. |
| S X O X A | 4 | 0.866 | 0.217 | <1 | n.s. |
| Within cells | 100 | 48.834 | 0.488 | | |

Table 9

Preferred Evaluative Usefulness as Indicated by Subjects' Choice on the Post Task 1 Questionaire (EU2)

| Source of variance | df | SS | MS | F | p< |
|---|---|---|---|---|---|
| Sex (S) | 1 | 0.002 | 0.002 | <1 | n.s. |
| Outcome (O) | 1 | 2.269 | 2.269 | 4.66 | .05 |
| Achievement motivation (A) | 4 | 6.200 | 1.550 | 3.18 | .025 |
| S X O | 1 | 0.169 | 0.169 | <1 | n.s. |
| S X A | 4 | 2.467 | 0.617 | 1.27 | n.s. |
| O X A | 4 | 0.366 | 0.092 | <1 | n.s. |
| S X O X A | 4 | 0.967 | 0.242 | <1 | n.s. |
| Within cells | 100 | 48.708 | 0.487 | | |

Table 10

Preferred Evaluative Usefulness as Indicated by the Number of Extreme and Intermediate Probability of Success Trials on Task 2 (EU3)

| Source of variance | df | SS | MS | F | p< |
|---|---|---|---|---|---|
| Sex (S) | 1 | 54.675 | 54.675 | 4.25 | .05 |
| Outcome (O) | 1 | 0.408 | 0.408 | <1 | n.s. |
| Achievement motivation (A) | 4 | 28.033 | 7.008 | <1 | n.s. |
| S X O | 1 | 9.075 | 9.075 | <1 | n.s. |
| S X A | 4 | 16.534 | 4.133 | <1 | n.s. |
| O X A | 4 | 59.134 | 14.784 | 1.15 | n.s. |
| S X O X A | 4 | 29.299 | 7.325 | <1 | n.s. |
| Within cells | 100 | 1286.167 | 12.866 | | |

Table 11

Points Attributed to Ability Following Task 1 (Abil 1) with Scores Equated for the Success and Failure Conditions

| Source of variance | df | SS | MS | F | p< |
|---|---|---|---|---|---|
| Sex (S) | 1 | 45.522 | 45.522 | 1.37 | n.s. |
| Outcome (O) | 1 | 278.801 | 278.801 | 8.37 | .005 |
| Achievement motivation (A) | 4 | 95.373 | 23.843 | <1 | n.s. |
| S X O | 1 | 79.886 | 79.886 | 2.40 | n.s. |
| S X A | 4 | 88.638 | 22.159 | <1 | n.s. |
| O X A | 4 | 90.789 | 22.697 | <1 | n.s. |
| S X O X A | 4 | 279.117 | 69.779 | 2.09 | .10 |
| Within cells | 100 | 3331.401 | 33.314 | | |

Table 12

Points Attributed to Effort Following Task 1 (Ef 1) with Scores Equated for the Success and Failure Conditions

| Source of variance | df | SS | MS | F | p< |
|---|---|---|---|---|---|
| Sex (S) | 1 | 4.428 | 4.428 | <1 | n.s. |
| Outcome (O) | 1 | 45.326 | 45.326 | 1.67 | n.s. |
| Achievement motivation (A) | 4 | 217.927 | 54.482 | 2.00 | .10 |
| S X O | 1 | 12.642 | 12.642 | <1 | n.s. |
| S X A | 4 | 164.045 | 41.011 | 1.51 | n.s. |
| O X A | 4 | 34.977 | 8.744 | <1 | n.s. |
| S X O X A | 4 | 188.936 | 47.234 | 1.74 | n.s. |
| Within cells | 100 | 2720.030 | 27.200 | | |

Table 13

Points Attributed to Task Ease Following Task 1 (Ez 1) with Scores Equated for the Success and Failure Conditions

| Source of variance | df | SS | MS | F | p< |
|---|---|---|---|---|---|
| Sex (S) | 1 | 95.498 | 95.498 | 4.56 | .05 |
| Outcome (O) | 1 | 339.259 | 339.259 | 16.20 | .001 |
| Achievement motivation (A) | 4 | 76.615 | 19.154 | <1 | n.s. |
| S X O | 1 | 63.147 | 63.147 | 3.01 | .10 |
| S X A | 4 | 226.482 | 56.620 | 2.70 | .05 |
| O X A | 4 | 139.536 | 34.882 | 1.67 | n.s. |
| S X O X A | 4 | 36.441 | 9.110 | <1 | n.s. |
| Within cells | 100 | 2094.611 | 20.946 | | |

Table 14

Points Attributed to Luck Following Task 1 (Lk 1) with Scores Equated for the Success and Failure Conditions

| Source of variance | df | SS | MS | F | p< |
|---|---|---|---|---|---|
| Sex (S) | 1 | 225.530 | 225.530 | 3.71 | .10 |
| Outcome (O) | 1 | 1710.453 | 1710.453 | 28.14 | .001 |
| Achievement motivation (A) | 4 | 479.623 | 119.906 | 1.97 | n.s. |
| S X O | 1 | 405.205 | 405.205 | 6.67 | .025 |
| S X A | 4 | 323.251 | 80.813 | 1.33 | n.s. |
| O X A | 4 | 187.230 | 46.808 | <1 | n.s. |
| S X O X A | 4 | 57.429 | 14.357 | <1 | n.s. |
| Within cells | 100 | 6078.433 | 60.784 | | |

Table 15

Attributions to Ability on a Likert Type Scale Following Task 1 (Good 1)

| Source of variance | df | SS | MS | F | p< |
|---|---|---|---|---|---|
| Sex (S) | 1 | 9.075 | 9.075 | 3.57 | .10 |
| Outcome (O) | 1 | 147.408 | 147.408 | 57.92 | .001 |
| Achievement motivation (A) | 4 | 6.300 | 1.575 | <1 | n.s. |
| S X O | 1 | 1.009 | 1.009 | <1 | n.s. |
| S X A | 4 | 9.633 | 2.408 | <1 | n.s. |
| O X A | 4 | 1.634 | 0.048 | <1 | n.s. |
| S X O X A | 4 | 16.033 | 4.008 | 1.58 | n.s. |
| Within cells | 100 | 254.500 | 2.545 | | |

Table 16

Attributions to Effort on a Likert Type Scale Following Task 1 (Try 1)

| Source of variance | df | SS | MS | F | p< |
|---|---|---|---|---|---|
| Sex (S) | 1 | 0.075 | 0.075 | <1 | n.s. |
| Outcome (O) | 1 | 12.675 | 12.675 | 2.98 | .10 |
| Achievement motivation (A) | 4 | 14.300 | 3.575 | <1 | n.s. |
| S X O | 1 | 0.208 | 0.208 | <1 | n.s. |
| S X A | 4 | 14.467 | 3.617 | <1 | n.s. |
| O X A | 4 | 2.033 | 0.058 | <1 | n.s. |
| S X O X A | 4 | 12.334 | 3.084 | <1 | n.s. |
| Within cells | 100 | 425.500 | 4.255 | | |

Table 17

Attributions to Task Difficulty on a Likert Type Scale Following Task 1 (Dif 1)

| Source of variance | df | SS | MS | F | p< |
|---|---|---|---|---|---|
| Sex (S) | 1 | 0.300 | 0.300 | <1 | n.s. |
| Outcome (O) | 1 | 56.033 | 56.033 | 16.16 | .001 |
| Achievement motivation (A) | 4 | 6.117 | 1.529 | <1 | n.s. |
| S X O | 1 | 4.800 | 4.800 | 1.38 | n.s. |
| S X A | 4 | 14.116 | 3.529 | 1.02 | n.s. |
| O X A | 4 | 11.217 | 2.804 | <1 | n.s. |
| S X O X A | 4 | 12.617 | 3.154 | <1 | n.s. |
| Within cells | 100 | 346.667 | 3.467 | | |

Table 18

Attributions to Luck on a Likert Type Scale Following Task 1 (Lky 1)

| Source of variance | df | SS | MS | F | p< |
|---|---|---|---|---|---|
| Sex (S) | 1 | 9.633 | 9.633 | 2.51 | n.s. |
| Outcome (O) | 1 | 19.200 | 19.200 | 5.01 | .05 |
| Achievement motivation (A) | 4 | 20.750 | 5.188 | 1.35 | n.s. |
| S X O | 1 | 1.200 | 1.200 | <1 | n.s. |
| S X A | 4 | 22.950 | 5.738 | 1.50 | n.s. |
| O X A | 4 | 10.883 | 2.721 | <1 | n.s. |
| S X O X A | 4 | 26.551 | 6.638 | 1.73 | n.s. |
| Within cells | 100 | 383.333 | 3.833 | | |

Table 19

Anticipated Score if Task 1 Were Done Again (Question 12 Post-Task 1 Questionaire)

| Source of variance | df | SS | MS | F | p< |
|---|---|---|---|---|---|
| Sex (S) | 1 | 37.408 | 37.408 | 2.73 | .10 |
| Outcome (O) | 1 | 3933.075 | 3933.075 | 287.13 | .001 |
| Achievement motivation (A) | 4 | 5.354 | 1.339 | <1 | n.s. |
| S X O | 1 | 42.009 | 42.009 | 3.07 | .10 |
| S X A | 4 | 37.488 | 9.372 | <1 | n.s. |
| O X A | 4 | 66.321 | 16.580 | 1.21 | n.s. |
| S X O X A | 4 | 1.387 | 0.347 | <1 | n.s. |
| Within cells | 100 | 1369.750 | 13.698 | | |

Table 20

Points Attributed to Ability Following Task 2 (Abil 2)

| Source of variance | df | SS | MS | F | p< |
|---|---|---|---|---|---|
| Sex (S) | 1 | 0.026 | 0.026 | <1 | n.s. |
| Outcome (O) | 1 | 1.813 | 1.813 | 1.71 | n.s. |
| Achievement motivation (A) | 4 | 2.196 | 0.549 | <1 | n.s. |
| S X O | 1 | 8.726 | 8.726 | 8.24 | .005 |
| S X A | 4 | 4.862 | 1.215 | 1.15 | n.s. |
| O X A | 4 | 8.283 | 2.071 | 1.96 | n.s. |
| S X O X A | 4 | 0.828 | 0.207 | <1 | n.s. |
| Within cells | 100 | 105.925 | 1.059 | | |

Table 21

Points Attributed to Effort Following Task 2 (Ef 2)

| Source of variance | df | SS | MS | F | p< |
|---|---|---|---|---|---|
| Sex (S) | 1 | 4.126 | 4.126 | 3.25 | .10 |
| Outcome (O) | 1 | 0.063 | 0.063 | <1 | n.s. |
| Achievement motivation (A) | 4 | 6.667 | 1.667 | 1.31 | n.s. |
| S X O | 1 | 3.588 | 3.588 | 2.82 | .10 |
| S X A | 4 | 5.741 | 1.435 | 1.13 | n.s. |
| O X A | 4 | 2.554 | 0.638 | <1 | n.s. |
| S X O X A | 4 | 6.279 | 1.570 | 1.24 | n.s. |
| Within cells | 100 | 127.091 | 1.271 | | |

Table 22

Points Attributed to Task Ease Following Task 2 (Ez 2)

| Source of variance | df | SS | MS | F | p< |
|---|---|---|---|---|---|
| Sex (S) | 1 | 1.813 | 1.813 | <1 | n.s. |
| Outcome (O) | 1 | 6.188 | 6.188 | 3.06 | .10 |
| Achievement motivation (A) | 4 | 6.477 | 1.619 | <1 | n.s. |
| S X O | 1 | 0.013 | 0.013 | <1 | n.s. |
| S X A | 4 | 2.294 | 0.573 | <1 | n.s. |
| O X A | 4 | 0.211 | 0.053 | <1 | n.s. |
| S X O X A | 4 | 2.510 | 0.628 | <1 | n.s. |
| Within cells | 100 | 202.466 | 2.025 | | |

Table 23

Points Attributed to Luck Following Task 2 (Lk 2)

| Source of variance | df | SS | MS | F | p< |
|---|---|---|---|---|---|
| Sex (S) | 1 | 0.501 | 0.501 | <1 | n.s. |
| Outcome (O) | 1 | 2.626 | 2.626 | 1.51 | n.s. |
| Achievement motivation (A) | 4 | 18.398 | 4.599 | 2.64 | .05 |
| S X O | 1 | 2.066 | 2.066 | 1.19 | n.s. |
| S X A | 4 | 5.314 | 1.329 | <1 | n.s. |
| O X A | 4 | 3.772 | 0.943 | <1 | n.s. |
| S X O X A | 4 | 4.458 | 1.114 | <1 | n.s. |
| Within cells | 100 | 174.299 | 1.743 | | |

Table 24

Attributions to Ability on a Likert Type Scale Following Task 2 (Good 2)

| Source of variance | DF | SS | MS | F | P< |
|---|---|---|---|---|---|
| Sex (S) | 1 | 3.333 | 3.333 | <1 | n.s. |
| Outcome (O) | 1 | 9.633 | 9.633 | 2.02 | n.s. |
| Achievement motivation (A) | 4 | 2.000 | 0.500 | <1 | n.s. |
| S X O | 1 | 4.801 | 4.801 | 1.01 | n.s. |
| S X A | 4 | 14.000 | 3.500 | <1 | n.s. |
| O X A | 4 | 29.534 | 7.383 | 1.55 | n.s. |
| S X O X A | 4 | 20.532 | 5.133 | 1.08 | n.s. |
| Within cells | 100 | 476.667 | 4.767 | | |

Table 25

Attributions to Effort on a Likert Type Scale Following Task 2 (Try 2)

| Source of variance | df | SS | MS | F | p< |
|---|---|---|---|---|---|
| Sex (S) | 1 | 3.675 | 3.675 | <1 | n.s. |
| Outcome (O) | 1 | 0.208 | 0.208 | <1 | n.s. |
| Achievement motivation (A) | 4 | 15.383 | 3.846 | <1 | n.s. |
| S X O | 1 | 3.958 | 3.958 | 1.02 | n.s. |
| S X A | 4 | 10.117 | 2.529 | <1 | n.s. |
| O X A | 4 | 11.584 | 2.896 | <1 | n.s. |
| S X O X A | 4 | 11.833 | 2.958 | <1 | n.s. |
| Within cells | 100 | 387.167 | 3.872 | | |

Table 26

Attributions to Task Difficulty on a Likert Type Scale Following Task 2 (Dif 2)

| Source of variance | df | SS | MS | F | p< |
|---|---|---|---|---|---|
| Sex (S) | 1 | 10.208 | 10.208 | 1.59 | n.s. |
| Outcome (O) | 1 | 57.408 | 57.408 | 8.97 | .005 |
| Achievement motivation (A) | 4 | 25.867 | 6.467 | 1.01 | n.s. |
| S X O | 1 | 1.876 | 1.876 | <1 | n.s. |
| S X A | 4 | 20.667 | 5.167 | <1 | n.s. |
| O X A | 4 | 7.458 | 1.864 | <1 | n.s. |
| S X O X A | 4 | 5.341 | 1.335 | <1 | n.s. |
| Within cells | 100 | 640.167 | 6.402 | | |

Table 27

Attributions to Luck on a Likert Type Scale Following Task 2 (Lky 2)

| Source of variance | df | SS | MS | F | p< |
|---|---|---|---|---|---|
| Sex (S) | 1 | 1.408 | 1.408 | <1 | n.s. |
| Outcome (O) | 1 | 0.408 | 0.408 | <1 | n.s. |
| Achievement motivation (A) | 4 | 64.967 | 16.242 | 3.79 | .01 |
| S X O | 1 | 1.892 | 1.892 | <1 | n.s. |
| S X A | 4 | 23.467 | 5.867 | 1.37 | n.s. |
| O X A | 4 | 31.133 | 7.783 | 1.82 | n.s. |
| S X O X A | 4 | 54.483 | 13.621 | 3.18 | .02 |
| Within cells | 100 | 428.834 | 4.288 | | |